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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,650	11/27/2001	Tsutae Shinoda	522.1919-C5	1571

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EXAMINER

SANTIAGO, MARICELI

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/993,650

Applicant(s)

SHINODA ET AL.

Examiner

Mariceli Santiago

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 January 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-30 and 32-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-30 and 32-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/010,169.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Response to Amendment***

The Amendment, filed on January 10, 2002, has been entered and acknowledged by the Examiner.

The Amendment, filed on May 16, 2002, has been entered and acknowledged by the Examiner.

Cancellation of claims 4 and 31 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 19, 20 and 22-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Amano (JP 59-108240).

Regarding claim 1, Amano discloses a substrate assembly for a surface discharge type color plasma display panel, comprising an insulating plate (1) having a main surface and first and second mutually perpendicular directions defined thereon plural address electrodes (3), supported on the main surface of the insulating plate (1) in spaced, parallel relationship in the first direction so as to define corresponding gaps (7) therebetween, and extending in the second direction, plural barrier ribs (5) supported on the main surface of the insulating plate (1), spaced in parallel relationship in the first direction and extending in the second direction, parallel to the plural address electrodes (3) and respectively defining plural elongated cavities (7) therebetween aligned with respective address electrodes (3), and being continuous throughout

the length thereof and of a substantially common length in the second direction, and plural color phosphor layers (6) of different primary colors formed respectively in the plural elongated cavities and arranged in a repeating succession, in the first direction, of plural sets of color linear strips respectively of said different primary colors (Page 2, bottom right paragraph), each color phosphor linear stripe extending continuously and without interruption within, and substantially throughout the length of, the respective elongated cavity (Figs. 1-4).

Regarding claim 5, Amano discloses a substrate assembly wherein the plural address electrodes (3) are formed directly on the main surface of the insulating plate (1) and the color phosphor layers (6) are formed on the main surface of the insulating plate and covering the address electrodes.

Regarding claim 19, Amano discloses a plasma display panel comprising a first substrate (1) having a main surface and plural elongated barriers (5) disposed on the main surface in parallel relationship, spaced in a first direction and extending along the main surface in a second direction, different from the first direction, and defining corresponding plural elongated cavities (7) therebetween, each cavity extending continuously and without interruption throughout the length thereof, plural address electrodes (3), each address electrode (3) being disposed centrally of a respective cavity (7) and extending along the length of the corresponding cavity, plural sets of color phosphor stripes (6), each set comprising a common number of plural color phosphor stripes of respective, different colors received in a respective set of plural, corresponding adjacent cavities (Page 2, bottom right paragraph), each color phosphorous stripe being continuous and uninterrupted throughout a length thereof and each cavity having only a single, continuous and uninterrupted length color phosphor stripe therein, and a second substrate (2) disposed on the first substrate and having plural display electrodes (4) thereon, extending in the first direction and crossing the barrier ribs (5) and the corresponding cavities (7)

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and respective address electrodes (3), and thereby defining an array of plural surface discharge cells arranged in rows in the first direction and columns in the second direction, individual discharge cells of each row being separated by corresponding barrier ribs and individual discharge cells of each column being defined by the respective display electrodes crossing the respective cavity (Figs. 1-4).

Regarding claim 20, Amano discloses a plasma display panel wherein each row of discharge cells, of the array thereof, has associated therewith and is defined by respective first and second display electrodes extending in the first direction and crossing the plural cavities (Fig. 1).

Regarding claim 22, Amano discloses a plasma display panel wherein each image element comprises plural unit luminescent areas of respective plural primary colors, each luminescent unit area comprising a discharge cell (Fig. 1).

Regarding claim 23, Amano discloses a plasma display panel wherein each cavity corresponds to, and includes, a respective row of plural, spaced discharge cells of the plasma display panel (Fig. 1).

Regarding claim 24, Amano discloses a substrate assembly for a surface discharge color type plasma display panel comprising a first substrate (1) having a main surface and plural elongated barrier ribs (5) disposed on the main surface in parallel relationship, spaced in a first direction and extending along the main surface in a second direction, different from the first direction, and defining corresponding plural elongated cavities (7) therebetween, each cavity (7) extending continuously and without interruption throughout a length thereof, plural address electrodes (3), each address electrode (3) aligned with a respective elongated cavity (7) and extending along the length of the corresponding cavity (7), and plural sets of color phosphor stripes (6), each set comprising a common number of plural color phosphor stripes of

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respective, different colors received in a respective set of plural, corresponding adjacent cavities (Page 2, bottom right paragraph), each color phosphorous stripe covering the respective address electrode (3) in the corresponding cavity (7) and being continuous and extending without interruption throughout a length thereof and each cavity having only a single, continuous length color phosphor stripe therein (Figs.1 and 4).

Regarding claim 25, Amano discloses a substrate assembly wherein the surface discharge color type plasma display panel has plural image elements arranged in parallel rows in the first direction and parallel columns in the second direction, the plural columns of image elements respectively corresponding to the plural sets of color phosphor stripes and the plural image elements of each column, corresponding to respective rows, comprising respective portions, spaced in the second direction, of the respective set of color phosphor stripes (Fig. 1).

Regarding claim 26, Amano discloses a substrate assembly wherein each set of color phosphor stripes comprises first, second and third adjacent stripes of respective, different primary colors (Page 2, bottom right paragraph), and each image element comprises first, second and third discharge cells corresponding to the respective portions of the respective first, second and third phosphor stripes of the respective set thereof corresponding to the image element.

Regarding claim 27, Amano discloses a substrate assembly wherein each cavity corresponds to, and includes, a respective row of plural, spaced discharge cells of the plasma display panel (Fig. 1).

Regarding claim 28, Amano discloses a substrate assembly for a surface discharge type plasma display panel having plural discharge cells arranged in plural rows and columns, each row comprising plural discharge cells corresponding respectively to the plural columns thereof, comprising an insulating plate (1) having a main surface and first and second mutually

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perpendicular directions defined thereon, plural address electrodes (3) supported on the main surface of the insulating plate (1), spaced in parallel relationship and so as to define corresponding gaps (7) therebetween in the first direction and extending in the second direction, the plural address electrodes (3) corresponding respectively to the plural columns of discharge cells (7), plural barrier ribs (5) supported on the main surface of the insulating plate (1) and disposed respectively in the corresponding gaps between the plural address electrodes (3) and correspondingly spaced in parallel relationship in the first direction and extending in the second direction, parallel to the plural address electrodes (3) and respectively defining plural elongated cavities therebetween, the plural elongated cavities (7) being of a substantially common length in the second direction and each elongated cavity being continuous and uninterrupted throughout the length thereof and accommodating therein a respective column of plural, spaced discharge cells, and plural color phosphor layers (6) of different primary colors formed respectively in the plural elongated cavities and arranged in a repeating succession, in the first direction, of plural sets of linear stripes respectively of said different primary colors (Page 2, bottom right paragraph), each color phosphor linear stripe extending continuously and without interruption within, and substantially throughout the length of, the respective elongated cavity, the plural, spaced discharge cells accommodated therein corresponding to respective, spaced portions of the continuous phosphor linear stripe (Figs. 1 and 4).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 29, 32, 34-36, 41-46 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (JP 59-108240) in view of Sano et al. (US 5,182,489).

Regarding claims 2 and 29, Amano discloses a substrate assembly wherein each barrier rib has opposite sidewalls substantially transverse to the main surface of the insulating plate, opposed sidewalls of adjacent barrier ribs comprising corresponding sidewalls of the respective, elongated cavity defined therebetween, Amano is silent in regards to each color phosphor linear stripe is formed so as to extend in the second direction between, and substantially onto and covering, the corresponding, opposed sidewalls of the adjacent barrier ribs. In the same field of endeavor, Sano discloses a plasma display panel comprising barrier ribs in which a phosphor layer extend substantially onto and covering, the corresponding, opposed sidewalls of adjacent barrier ribs in order to increase surface coverage of the phosphor layer and thus provide a brighter display panel with improved luminance. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the phosphor surface coverage arrangement disclosed by Sano in the substrate assembly of Amano in order to increase surface coverage of the phosphor layer and thus provide a brighter display panel with improved luminance.

Regarding claim 32, Amano discloses a substrate assembly wherein the plural address (3) electrodes are formed directly on the main surface of the insulating plate and the color phosphor layers (6) are formed on the main surface of the insulating plate and covering the address electrodes.

Regarding claims 34-36, Amano discloses a substrate assembly wherein the plurality of barrier ribs having top surfaces which are substantially planar and lie substantially in a common plane. Amano fails to disclose the limitations of the barrier having a common width in the first direction not less than 15  $\mu\text{m}$ , and having a substantially common height within  $\pm 10 \mu\text{m}$  of each



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other, particularly within  $\pm 5 \mu\text{m}$  of each other. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to have a barrier rib having a common width in the first direction not less than  $15 \mu\text{m}$ , and having a substantially common height within  $\pm 10 \mu\text{m}$  of each other, particularly within  $\pm 5 \mu\text{m}$  of each other, since discovering an optimum value of a result variable is considered within the skills of the art.

Regarding claims 41-46 and 48, Amano discloses the claimed invention except for the limitation of the phosphor layer being coated on a whole internal surface of the respective elongated cavity and having thickness in a range of from 10 to  $50 \mu\text{m}$ . In the same field of endeavor, Sano discloses a substrate assembly comprising barrier ribs wherein a phosphor layer is coated on a whole internal surface of the respective elongated cavity and having thickness in a range of from 10 to  $50 \mu\text{m}$  the in order to increase surface coverage of the phosphor layer and thus provide a brighter display panel with improved luminance. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the phosphor surface coverage arrangement disclosed by Sano in the substrate assembly of Amano in order to increase surface coverage of the phosphor layer and thus provide a brighter display panel with improved luminance.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (JP 59-108240) in view of Shinada et al. (US 4,725,255).

Regarding claim 3, Amano disclose the claimed invention except for the limitation of a dielectric layer formed on the main surface of the insulating plate, the plural address electrodes and plural barrier ribs being formed on the dielectric layer. In the same field of endeavor,

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Shinada discloses a substrate assembly wherein a dielectric layer is formed on the surface of the substrate, the plural address electrodes and plural barrier ribs being formed on the dielectric layer in order to provide an undercoat and protective layer which absorbs any unnecessary component of the electrodes and barrier ribs pastes during patterning and baking of the substrate assembly. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the insulating layer disclosed by Shinada in the substrate assembly of Amano in order to provide a undercoat and protective layer which absorbs any unnecessary component of the electrodes and barrier ribs pastes during patterning and baking of the substrate assembly.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (JP 59-108240) in view of Wada et al. (US 4,692,662).

Regarding claim 6, Amano-Sano disclose the claimed invention except for each barrier rib includes, in a direction transverse to the main surface, a lower and an upper portion, the lower portion being of a first, relatively light color for improving brightness of an image display and the upper portion being of a second, relatively dark color for improving contrast of the image display. In the same field of endeavor, Wada discloses a plasma display panel comprising barrier ribs wherein each barrier rib includes, in a direction transverse to the main surface, a lower and an upper portion, the lower portion being of a first, relatively light color for improving brightness of an image display and the upper portion being of a second, relatively dark color in order to reduce the reflectance of the displaying surface due to ambient light and improve the contrast of the display device (Column 4, lines 8-28). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the barrier ribs disclosed by Wada in the substrate assembly of Amano-Sano in order to reduce the

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reflectance of the displaying surface due to ambient light and improve the contrast of the display device.

Claims 7-9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (JP 59-108240).

Regarding claims 7-9, Amano discloses a substrate assembly wherein the plurality of barrier ribs having top surfaces which are substantially planar and lie substantially in a common plane. Amano fails to disclose the limitations of the barrier having a common width in the first direction not less than 15  $\mu\text{m}$ , and having a substantially common height within  $\pm 10 \mu\text{m}$  of each other, particularly within  $\pm 5 \mu\text{m}$  of each other. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to have a barrier rib having a common width in the first direction not less than 15  $\mu\text{m}$ , and having a substantially common height within  $\pm 10 \mu\text{m}$  of each other, particularly within  $\pm 5 \mu\text{m}$  of each other, since discovering an optimum value of a result variable is considered within the skills of the art.

Regarding claim 21, Amano discloses a plasma display panel comprising a discharge gas mixture of He + Xe, of about 1 mole %. Amano fails to disclose a gas mixture of Ne + Xe, however, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to provide a gas mixture of Ne + Xe, since the selection of known materials for a known purpose is within the skill of the art.

Claims 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (JP 59-108240) in view Shinoda et al. (JP 03-077238).

Regarding claims 10, 12 and 13, Amano discloses a substrate assembly for use in combination with a second substrate to be disposed on the top surfaces of the plural barrier ribs and having display electrodes extending in the first direction and spaced in parallel relationship in the second direction, the spaced display electrodes in the second direction defining, with each set of color phosphor linear stripes of said different primary colors, respectively corresponding image elements spaced in the second direction, and each display electrodes defining, with the repeating succession of plural sets of color phosphor linear stripes respectively of said different primary colors, a corresponding succession of plural image elements in the first direction, the tops of the barrier ribs being spaced from the second substrate by a substantially common distance having a variation between the respective tops of the ribs and the contacting surface of the second substrate of not greater than 20  $\mu\text{m}$ , particularly 10  $\mu\text{m}$ .

Amano fails to disclose the limitation of the display electrodes being arranged in pairs display electrodes. However, in the same field of endeavor, Shinoda discloses a substrate assembly wherein the display electrodes are arranged in pairs electrodes in order to provide a plasma display matrix of the dot-type matrix wherein an initial voltage is generated between the address electrode and one of the display electrodes and a sustaining discharge is maintained between both the electrodes of the display electrode pair, the tops of the barrier ribs being spaced from the second substrate by a substantially common distance having a variation between the respective tops of the ribs and the contacting surface of the second substrate of not greater than 20  $\mu\text{m}$ , particularly 10  $\mu\text{m}$  (Page 3, lower right paragraph and Page 4, upper left paragraph). Thus, it would have been obvious at the time the invention was made to a person

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having ordinary skills in the art to incorporate the electrode assembly disclosed by Shinoda in the substrate assembly of Amano in order to provide a plasma display matrix of the dot-type matrix wherein an initial voltage is generated between the address electrode and one of the display electrodes and a sustaining discharge is maintained between both the electrodes of the display electrode pair.

Regarding claim 11, Amano-Shinoda disclose a substrate assembly wherein each of the image elements is of a substantially square configuration and the respective set of color phosphor linear stripes of different primary colors, of the respectively associated set of elongated cavities, define, in each image element, respective unit luminescent areas of generally rectangular, common configurations.

Regarding claim 14, Amano discloses a plasma display panel comprising a first substrate (1) having a main surface and plural elongated barrier ribs (5) disposed on the main surface in parallel relationship, spaced in a first direction and extending in a second direction along the main surface, different from the first direction, and defining plural, corresponding elongated cavities (7) therebetween of substantially a common length in the second direction, each elongated cavity (7) extending continuously between the corresponding pair of adjacent elongated barrier ribs throughout the length thereof, and plural address electrodes (3), each address electrode (3) aligned with a respective pair of adjacent barrier ribs (5) and extending along and throughout the length of the corresponding cavity, plural sets of color phosphor stripes (6), each set comprising a common number of plural color phosphor stripes of respective, different colors received in a respective set of plural, corresponding adjacent cavities (Page 2, bottom right paragraph), each color phosphor stripe extending continuously and without interruption substantially throughout the length of the corresponding cavity, and a second substrate (2) disposed on the first substrate, contacting the barrier ribs and enclosing

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the cavities defined therebetween, the second substrate (2) having plural display electrodes (4) thereon, extending in the first direction and crossing the barrier ribs (5), the corresponding cavities (7) and the associated address electrodes (3), each display electrode defining, with the successive sets of color phosphor stripes and respective address electrodes crossed thereby, respective and successive image elements.

Amano fails to disclose the limitation of the display electrodes being arranged in pairs of display electrodes. However, in the same field of endeavor, Shinoda discloses a substrate assembly wherein the display electrodes are arranged in pairs electrodes in order to provide a plasma display matrix of the dot-type matrix wherein an initial voltage is generated between the address electrode and one of the display electrodes and a sustaining discharge is maintained between both the electrodes of the display electrode pair (Page 3, lower right paragraph and Page 4, upper left paragraph). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the electrode assembly disclosed by Shinoda in the substrate assembly of Amano in order to provide a plasma display matrix of the dot-type matrix wherein an initial voltage is generated between the address electrode and one of the display electrodes and a sustaining discharge is maintained between both the electrodes of the display electrode pair.

Regarding claim 15, Amano discloses a plasma display panel wherein each row of discharge cells, of the array thereof, has associated therewith and is defined by respective first and second display electrodes extending in the first direction and crossing the plural cavities (Fig. 1).

Regarding claim 16, Amano discloses a plasma display panel comprising a discharge gas mixture of He + Xe, of about 1 mole %. Amano fails to disclose a gas mixture of Ne + Xe, however, it has been held to be within the general skill of a worker in the art to select a known

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material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to provide a gas mixture of Ne + Xe, since the selection of known materials for a known purpose is within the skill of the art.

Regarding claim 17, Amano discloses a plasma display panel wherein each image element comprises plural unit luminescent areas of respective plural primary colors, each luminescent unit area comprising a discharge cell (Fig. 1).

Regarding claim 18, Amano discloses a plasma display panel wherein each cavity corresponds to, and includes, a respective row of plural, spaced discharge cells of the plasma display panel (Fig. 1).

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (JP 59-108240) in view of Sano et al. (US 5,182,489), and further in view of Shinada et al. (US 4,725,255).

Regarding claim 30, Amano-Sano disclose the claimed invention except for the limitation of a dielectric layer formed on the main surface of the insulating plate, the plural address electrodes and plural barrier ribs being formed on the dielectric layer. In the same field of endeavor, Shinada discloses a substrate assembly wherein a dielectric layer is formed on the surface of the substrate, the plural address electrodes and plural barrier ribs being formed on the dielectric layer in order to provide an undercoat and protective layer which absorbs any unnecessary component of the electrodes and barrier ribs pastes during patterning and baking of the substrate assembly. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the insulating layer disclosed by Shinada in the substrate assembly of Amano-Sano in order to provide an undercoat and

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protective layer which absorbs any unnecessary component of the electrodes and barrier ribs pastes during patterning and baking of the substrate assembly.

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (JP 59-108240) in view of Sano et al. (US 5,182,489), and further in view of Wada et al. (US 4,692,662).

Regarding claim 33, Amano-Sano disclose the claimed invention except for each barrier rib includes, in a direction transverse to the main surface, a lower and an upper portion, the lower portion being of a first, relatively light color for improving brightness of an image display and the upper portion being of a second, relatively dark color for improving contrast of the image display. In the same field of endeavor, Wada discloses a plasma display panel comprising barrier ribs wherein each barrier rib includes, in a direction transverse to the main surface, a lower and an upper portion, the lower portion being of a first, relatively light color for improving brightness of an image display and the upper portion being of a second, relatively dark color in order to reduce the reflectance of the displaying surface due to ambient light and improve the contrast of the display device (Column 4, lines 8-28). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the barrier ribs disclosed by Wada in the substrate assembly of Amano-Sano in order to reduce the reflectance of the displaying surface due to ambient light and improve the contrast of the display device.

Claims 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (JP 59-108240) in view of Sano et al. (US 5,182,489), and further in view of Shinoda et al. (JP 03-077238).



Regarding claims 37, 38 and 40, Amano-Sano discloses a substrate assembly for use in combination with a second substrate to be disposed on the top surfaces of the plural barrier ribs and having display electrodes extending in the first direction and spaced in parallel relationship in the second direction, the spaced display electrodes in the second direction defining, with each set of color phosphor linear stripes of said different primary colors, respectively corresponding image elements spaced in the second direction, and each display electrodes defining, with the repeating succession of plural sets of color phosphor linear stripes respectively of said different primary colors, a corresponding succession of plural image elements in the first direction, the tops of the barrier ribs being spaced from the second substrate by a substantially common distance having a variation between the respective tops of the ribs and the contacting surface of the second substrate of not greater than 20  $\mu\text{m}$ , particularly 10  $\mu\text{m}$ .

Amano-Sano fail to disclose the limitation of the display electrodes being arranged in pairs display electrodes. However, in the same field of endeavor, Shinoda discloses a substrate assembly wherein the display electrodes are arranged in pairs electrodes in order to provide a plasma display matrix of the dot-type matrix wherein an initial voltage is generated between the address electrode and one of the display electrodes and a sustaining discharge is maintained between both the electrodes of the display electrode pair, the tops of the barrier ribs being spaced from the second substrate by a substantially common distance having a variation between the respective tops of the ribs and the contacting surface of the second substrate of not greater than 20  $\mu\text{m}$ , particularly 10  $\mu\text{m}$  (Page 3, lower right paragraph and Page 4, upper left paragraph). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the electrode assembly disclosed by Shinoda in the substrate assembly of Amano-Sano in order to provide a plasma display matrix of the dot-

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type matrix wherein an initial voltage is generated between the address electrode and one of the display electrodes and a sustaining discharge is maintained between both the electrodes of the display electrode pair.

Regarding claim 39, Amano-Sano disclose a substrate assembly wherein each of the image elements is of a substantially square configuration and the respective set of color phosphor linear stripes of different primary colors, of the respectively associated set of elongated cavities, define, in each image element, respective unit luminescent areas of generally rectangular, common configurations.

Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (JP 59-108240) in view of Shinoda et al. (JP 03-077238), and further in view of Sano et al. (US 5,182,489).

Regarding claim 47, Amano-Shinoda discloses the claimed invention except for the limitation of the phosphor layer being coated on a whole internal surface of the respective elongated cavity and having thickness in a range of from 10 to 50  $\mu\text{m}$ . In the same field of endeavor, Sano discloses a substrate assembly comprising barrier ribs wherein a phosphor layer is coated on a whole internal surface of the respective elongated cavity and having thickness in a range of from 10 to 50  $\mu\text{m}$  the in order to increase surface coverage of the phosphor layer and thus provide a brighter display panel with improved luminance. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the phosphor surface coverage arrangement disclosed by Sano in the substrate assembly of Amano-Shinoda in order to increase surface coverage of the phosphor layer and thus provide a brighter display panel with improved luminance.

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***Other Prior Art Cited***

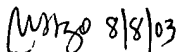
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mariceli Santiago whose telephone number is (703) 305-1083. The examiner can normally be reached on Monday-Friday from 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7382. Additionally, the following fax phone numbers can be used during the prosecution of this application (703) 872-9318 (for response before a Final Action) and (703) 872-9319 (for response after a Final Action).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Mariceli Santiago  
Patent Examiner  
Art Unit 2879

  
VIP PATEL  
PRIMARY EXAMINER